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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/599,250

09/22/2006

A. Paul Alivisatos

1B-2018

6259

8076

7590

06/16/2009

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EXAMINER

LE, HOA T

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

06/16/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/599,250	ALIVISATOS ET AL.	
	Examiner	Art Unit	
	H. (Holly) T. Le	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 21-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 28-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>02/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Specification

2. The disclosure is objected to there are two specifications filed with the present application. The most recent specification was filed in June 13, 2008 and the original specification was filed in March 22, 2005. However, Applicant fails to identify which specification is a substitute. It appears that Applicant still refers to the originally filed specification in their remarks. Applicant is required to clearly identify which application is served as a substitute and which is meant to be replaced.

Election/Restrictions

3. Applicant's amendment filed February 25, 2009 necessitates the following restriction requirement:

4. This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim 1-20 and 28-31, drawn to a nanoreactor and method of using the reactor, wherein the nanoreactor comprises a nanoparticle that is not a metal-chalcogenide semiconductor;

Group II, claims 21-27, drawn to a method of making a nanoreactor.

5. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature of group I is that the nanoparticle contained in the nanoreactor is not a metal chalcogenide semiconductor. Such special technical feature is not present or required in group II.

6. Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

8. Claims 1-20, 28 and 30-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are now amended to preclude metal chalcogenide semiconductor being the material for the nanoparticle that is dispersed in the space surrounded by the nanoshell of the nanoreactor. In order to find support for this amendment, Applicant asserted as follows:

“Claim 1 was amended to identify that the nanoparticle is "not a metal-chalcogenide semiconductor." A metal-chalcogenide is a binary compound of a metal and a chalcogen, the latter of which is an element selected from the group of oxygen, sulfur, selenium, and tellurium. A metal-chalcogenide semiconductor is a metal- chalcogenide that is a semiconductor (i.e. it has a bandgap between a valence band and a conduction band). While the applicants teach that a shell that surrounds the nanoparticle may be a metal-chalcogenide (e.g., CoO or CoSe at p. 7, lines 16-19, and p. 9, lines 21- 23), none of the embodiments or examples taught by the applicants recite a nanoparticle within the shell that is a metal-chalcogenide semiconductor.”

There are two problems with Applicant’s assertion. First, the assertion incorrectly suggests that nanoparticle is nanoshell. Note that nanoparticle is described in the instant claims as being “disposed within the space” that is enveloped by the nanoshell of the nanoreactor. So they cannot be the same. Secondly, as mentioned in paragraph 2 above, Applicant’s remark appears to refer to the original specification filed March 25,

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2005 instead of the most recently submitted specification (filed June 13, 2008). For clarity, the two portions cited by Applicant are reinstated below:

In one embodiment of the present invention a nanoreactor is provided which may be used as a catalytic material. In one non-limiting embodiment a Pt@CoO nanoreactor is synthesized, in which a Pt nanoparticle of a few nanometers is encapsulated in a CoO shell. (March-2005 specification, page 7, lines 16-19)

In another embodiment of the present invention, the outside starting nanocrystal shell material may be reacted with selenium to produce shell nanocrystals, for example cobalt may be reacted with selenium. (March-2005 specification, page 9, lines 21-23).

Neither of the above paragraphs describes nanoparticle material as contended by Applicant. Rather, they describe nanoshell material of the nanoreactor. Note that nanoparticle is described in the instant claims as being “disposed within the space” that is enveloped by the nanoshell of the nanoreactor. A description for nanoshell cannot be used as a description for nanoparticle where the specification and original claims clearly define nanoparticle and nanoshell are two distinct components in the claimed nanoreactor. While alternative elements that are positively recited in the specification may be explicitly excluded in the claims, the mere absence of a positive recitation is not basis for exclusion. **MPEP 2173.05(i)**. Here, where nanoparticle is described in the specification, metal chalcogenide semiconductor is totally absent. Therefore, the specification provides no support for the negative limitation recited in the instant claims. Accordingly, the claims as amended contain new matter.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. (Holly) T. Le whose telephone number is 571-272-1511. The examiner can normally be reached on 12:30 a.m. to 9:00 p.m. (EST), Mondays to Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. (Holly) T. Le/
Primary Examiner, Art Unit 1794

June 7, 2009